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servations, in 1740; of Maskelyne's at Schehalien, in 1774; General Mudge's, in 1802; and General Lambton's, in 1805; as well as of Piazzi's Catalogue. Mr. Pond's observations at Westbury agree too little with the Catalogue of Greenwich, he thinks, to be of any use in the inquiry; and Mechain's are opposed to others made by better instruments.

Dr. Brinkley does not think it an argument in favour of Bessel's refractions, that they give the obliquity of the ecliptic the same for both solstices; he rather supposes some particular equation is required for the solar refraction, Bessel's refraction at low altitudes being manifestly too large for the stars.

The question of parallax Dr. Brinkley still reserves for future discussion.

On the Figure requisite to maintain the Equilibrium of a Homogeneous Fluid Mass that revolves upon an Axis. By James Ivory, *A.M. F.R.S.* Read December 18, 1823. [*Phil. Trans.* 1824, *p.* 85.]

The author enumerates the various steps by which Sir Isaac Newton, M^c^Laurin, and Laplace have carried the theory of the equilibrium of a revolving fluid very near to perfection, but he observes that they have generally supposed the spheroid to differ but little from a sphere; and he proceeds in the present paper to investigate the figure "by a direct analysis, in which no arbitrary supposition is admitted."

Mr. Ivory thinks it necessary to distinguish carefully two separate cases; the first is when the particles of the fluid do not attract one another, and the second when the particles are endued with attractive powers. These, he says, are plainly two cases that are essentially different from one another; for in the first, a stratum added induces no other change than an increase of pressure caused by the action of the accelerating forces at the surface; but in the second, besides the pressure, a new force is introduced, arising from the mutual attraction between the matter of the stratum and the fluid mass to which it is added.

Mr. Ivory gives two different methods of investigating the fundamental laws of this equilibrium, the one which is the newest and most simple being contained in two propositions.

First, If a homogeneous fluid body revolving about an axis be in equilibrio by the attraction of its particles, any other mass of the same fluid having a similar figure, and revolving in the same time about an axis similarly placed, will likewise be in equilibrio by the attraction of its particles.

The proof is easily deduced from the well known properties of an attraction inversely proportioned to the square of the distance.

Secondly, If a homogeneous fluid mass revolve about an axis, and be in equilibrio by the attraction of its particles, all the level surfaces will be similar to the outer surface; and any stratum of the fluid contained between two level surfaces will attract particles in the inside (or within the interior surface of the stratum) with equal force in opposite directions.

On the Corrosion of Copper-sheeting by Sea-water, and on Methods of preventing this Effect; and on their Application to Ships of War and other Ships. By Sir Humphry Davy, *Bart. P.R.S.* Read January 22, 1824. [*Phil. Trans.* 1824, *p.* 151.]

When copper sheeting, however pure the metal may be, is exposed to sea-water, a green rust is formed upon it; which, when washed off, is replaced by a similar substance, till the whole of the metal is thus destroyed by corrosion. To prevent this effect, the President avails himself of the modification of chemical affinities, derived from electrical power; and in pursuing his researches in relation to this subject, he found the above-mentioned action upon copper counteracted by any weak negative electricity easily excited in it by the contact of a surface of tin not exceeding $\frac{1}{100}$th that of the copper, and made part of an electric circuit in sea-water. Other metals may be substituted, but the facility with which a perfect contact is made by solder with tin, and the facility with which its submuriate detaches from the metal, induce Sir Humphry Davy to regard it as best adapted to the purpose. He observes, further, that the cause which prevents the oxidation of the copper will also probably prevent the adhesion of marine animals and of vegetables. After adverting to the unequivocal and satisfactory results of his experiment made upon a small scale, the author states that the Lords Commissioners of the Admiralty have enabled him to make arrangements for pursuing them upon a very extended plan.

A finite and exact Expression for the Refraction of an Atmosphere nearly resembling that of the Earth. By Thomas Young, *M.D. For. Sec. R.S.* Read February 5, 1824. [*Phil. Trans.* 1824, *p.* 159.]

Having shown that if the pressure of the atmosphere be represented either by the square, or by the cube of the square root of the density, the astronomical refraction may be attained in a finite equation; and having adverted to Mr. Ivory's computation of the refraction with the assistance of converging series, and several transformations from an equation which expresses the pressure in terms of the density and of its square, Dr. Young proceeds to observe, that if we substitute for the simple density the cube of its square root, we shall represent the constitution of the most important part of the atmosphere with equal accuracy, although this expression supposes the total height somewhat smaller than the truth; and that we shall thus obtain a direct equation for the refraction, which agrees very nearly with Mr. Ivory's table, and still more accurately with that in the Nautical Almanac, and with the French tables.

At the horizon the refraction is equal to 33′ 49″·5, which is only 1″·5 less than the quantity assigned by the French tables and in the